**A Report
to the
Board of
Supervisors**

Planning and Development Building Inspection Services

Inspections Are Timely, But Improvement Is Needed To Ensure Effectiveness

February ■ 2012

*Maricopa County
Internal Audit
Department*

Ross L. Tate
County Auditor

The mission of Maricopa County is to provide regional leadership and fiscally responsible, necessary public services so that residents can enjoy living in a healthy and safe community.

The mission of the Internal Audit Department is to provide objective information on the County's system of internal controls to the Board of Supervisors so they can make informed decisions and protect the interests of County citizens.

The County Auditor reports directly to the Maricopa County Board of Supervisors, with an advisory reporting relationship to the Citizen's Audit Advisory Committee.

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"Do the Right Things Right!"

February 23, 2012

Max W. Wilson, Chairman, Board of Supervisors
Fulton Brock, Supervisor, District I
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We have completed our fiscal year 2012 review of the Planning and Development Department. This audit was performed in accordance with the annual audit plan approved by the Board of Supervisors. MGT of America assisted us in the information technology section. The specific areas reviewed were selected through a formal risk-assessment process.

Highlights of this report include the following:

- Building inspections are performed timely

- Inspection requirements are undefined

- Inspector qualifications are not verified

- IT user account and security management processes need improvement

Within this report, you will find an executive summary, specific information on the areas reviewed, recommendations for improvement, and the Planning and Development Department's response to our recommendations. We have reviewed this information with Joy Rich, Assistant County Manager, and appreciate the excellent cooperation provided by management and staff. If you have any questions, or wish to discuss the information presented in this report, please contact Richard Chard at 506-7539.

Sincerely,

Ross L. Tate
County Auditor

Executive Summary

Building Inspections Are Timely (Page 9)

Building inspections were performed timely (within one business day) in fiscal years 2010 and 2011.

Inspection Requirements Are Undefined (Page 10)

Improvement is needed to ensure that inspections are properly conducted. Specifically, (a) inspection requirements are undefined, (b) work performed is not well documented, and (c) policies and procedures are lacking. These weaknesses greatly increase the risk that code violations and/or other improprieties will go undetected, and inhibit management's ability to properly monitor operations. Planning and Development should (a) ensure that inspection requirements are clearly defined by inspection type and consider developing inspection checklists, to the extent practicable, (b) establish written internal policies and procedures for inspection operations, and (c) work with Regional Development Services Agency information technology to develop more useful management information system reports for monitoring inspections.

Inspector Qualifications Are Not Properly Verified (Page 14)

Inspector qualifications are not properly verified and professional certifications are not tracked. Failure to properly verify credentials could result in hiring an inspector who is not properly qualified. Planning and Development should ensure that qualifications are properly verified for all new hires and consider tracking professional certifications.

IT User Account Management Needs Improvement (Page 16)

Controls over user account management need improvement to ensure that system access privileges are (a) appropriately aligned with job duties, (b) properly approved and documented, and (c) removed promptly upon employee separation. We identified 41 employees with inappropriate access to inspection records, 2 employees with excessive administrative access rights, and 4 employees whose access was not removed promptly after separation. In addition, there was a lack of documentation for user privileges granted and training provided. These weaknesses greatly increase the risk of errors, unauthorized access, undetected system vulnerabilities, fraud, and/or malicious attack. Regional Development Services Agency information technology should establish effective user account management policies and procedures, and improve training documentation.

IT Policies Need Improvement (Page 18)

Security and change management policies and procedures need improvement. Many security management processes are informal or undocumented. Additionally, although a change management policy was recently established, it has not been formally approved and is not consistently followed. Inadequate security management procedures increase the risk of unauthorized access, and changes made outside a controlled configuration environment could degrade system performance, result in improperly processed reports or transactions, or contribute

to system outages. Regional Development Services Agency information technology should formalize security and change management policies and procedures and work with the permitting software vendor (Accela) to establish an audit log.

Key IT Controls Generally Followed Good Practices (Page 20)

Regional Development Services Agency information technology controls generally followed the international, generally accepted control framework known as COBIT in the following areas: sensitive licensure data, customer financial data, system interfaces, and service desk satisfaction.

Introduction

Background

Maricopa County (County) has comprehensive planning and zoning authority for over 3,000 square miles of land. Arizona law requires counties to plan and provide for the future growth and improvement of jurisdictional areas, to coordinate public improvements, and to form a planning and zoning commission to advise the board of supervisors in matters regarding planning, zoning, and subdivision platting.

The County Board of Supervisors (Board) established a Planning and Zoning Commission in 1951, when the County issued its first building permit. The Planning and Development Department (P&D) was formed in 1980 when the County's Building Safety and Planning departments were combined. P&D is responsible for the County's planning, zoning, and building safety functions. P&D's mission is to provide planning and development services in a safe and timely fashion to constituents of unincorporated Maricopa County so they can responsibly develop and enjoy real property.

<u>Organizational Structure</u>

P&D is organized into three divisions (Planning Services, Development Services, and Financial Services), and has 104 authorized full-time positions for fiscal year (FY) 2012, which is a 49% reduction from 205 positions authorized in FY 2008. The organizational chart is shown below.
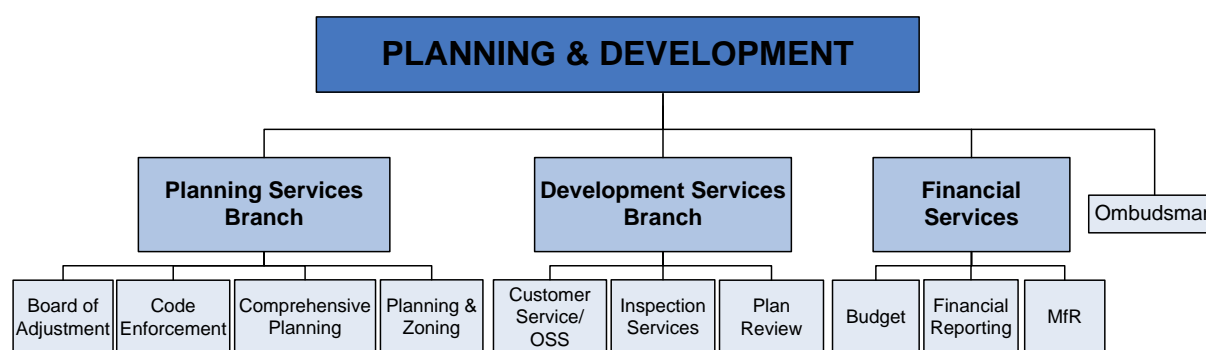
P&D is one of seven departments comprising the Regional Development Services Agency (RDSA), which includes Air Quality, Environmental Services, Emergency Management, Facilities Management, Public Health, and the Stadium District. Many support functions (e.g., human resources and information technology) have been consolidated in an effort to improve efficiency and maximize resources.

In addition, P&D is the lead agency for the One Stop Shop (OSS). The OSS was created in 1999 to coordinate and streamline customer service for P&D, Air Quality, Environmental Services, Flood Control District (FCD), and the Department of Transportation (MCDOT) at one central location. The purpose of the OSS is to improve service delivery to those involved in developing property in the unincorporated County.
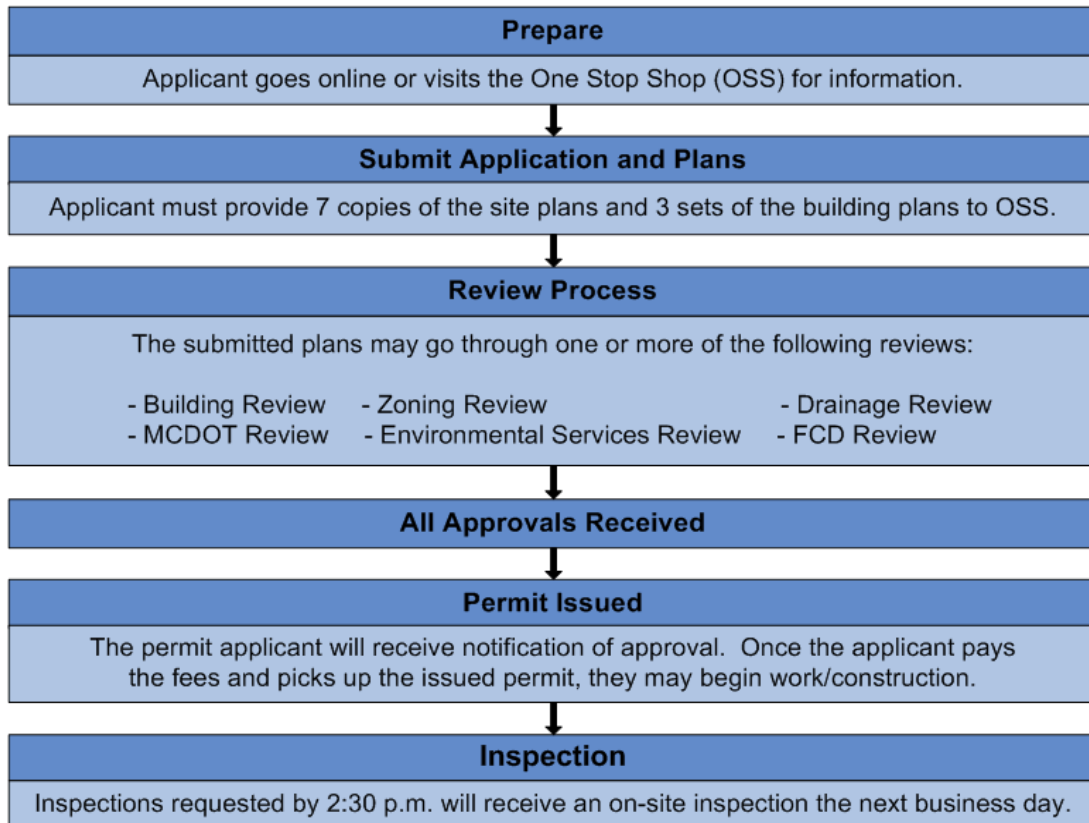
Building Permits

Arizona law requires a building permit for any construction of or addition to a building that costs $1,000 or more, and for most electrical, plumbing, and mechanical work. P&D is tasked with ensuring that construction is performed in conformance with the building codes adopted by the Board, as listed below. These codes establish the minimum requirements for safeguarding the public health and safety of the occupants of new and existing buildings/structures.

- 2009 International Building Code
- 2009 International Fuel Gas Code
- 2009 International Mechanical Code
- 2009 International Plumbing Code

- 2009 International Residential Code
- 2008 National Electrical Code
- 2003 International Fire Code
- Local Additions and Addenda

Builders within the unincorporated County apply to P&D for building permits for various structures (e.g., residential and commercial buildings, decks, garages, pools). The process is initiated when the applicant submits a permit application and applicable building and site plans to P&D. A general overview of the permitting process appears below.

The Building Permit Process

Prepare
Applicant goes online or visits the One Stop Shop (OSS) for information.

↓

Submit Application and Plans
Applicant must provide 7 copies of the site plans and 3 sets of the building plans to OSS.

↓

Review Process
The submitted plans may go through one or more of the following reviews:

- Building Review   - Zoning Review   - Drainage Review
- MCDOT Review   - Environmental Services Review   - FCD Review

↓

All Approvals Received

↓

Permit Issued
The permit applicant will receive notification of approval. Once the applicant pays the fees and picks up the issued permit, they may begin work/construction.

↓

Inspection
Inspections requested by 2:30 p.m. will receive an on-site inspection the next business day.

Source: Planning & Development Department

Inspection Services

After a permit is approved, P&D's Inspection Services unit is tasked with performing inspections for all commercial and residential buildings and other permitted structures in the unincorporated County, as well as all County-owned facilities regardless of location. A staff of 20 (10 building and 5 drainage inspectors, 4 supervisors, and 1 inspections manager) conducts a wide variety of highly technical inspections (e.g., electrical, foundation, plumbing, mechanical) to help ensure that construction is performed in conformance with applicable codes and approved site plans. After all required inspections are passed, a permit is finalized and a Certificate of Occupancy is generally issued.

Operating Budget

For many years, P&D fee collections exceeded expenditures, which contributed to a fund balance that totaled $17.4 million in FY 2006. In FY 2007, that trend reversed due to the recession and dramatic slump in the housing market and the resultant decrease in demand for P&D services. The 10-year trend in revenues and expenditures is shown below.
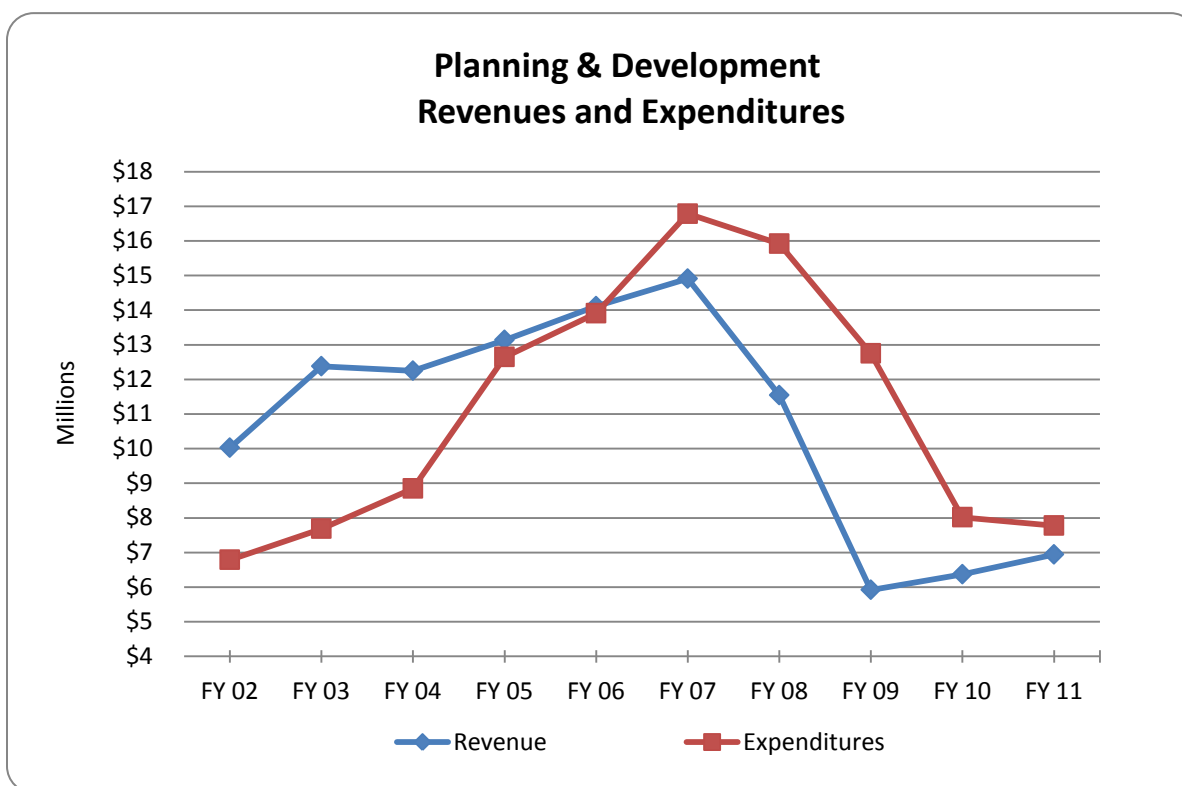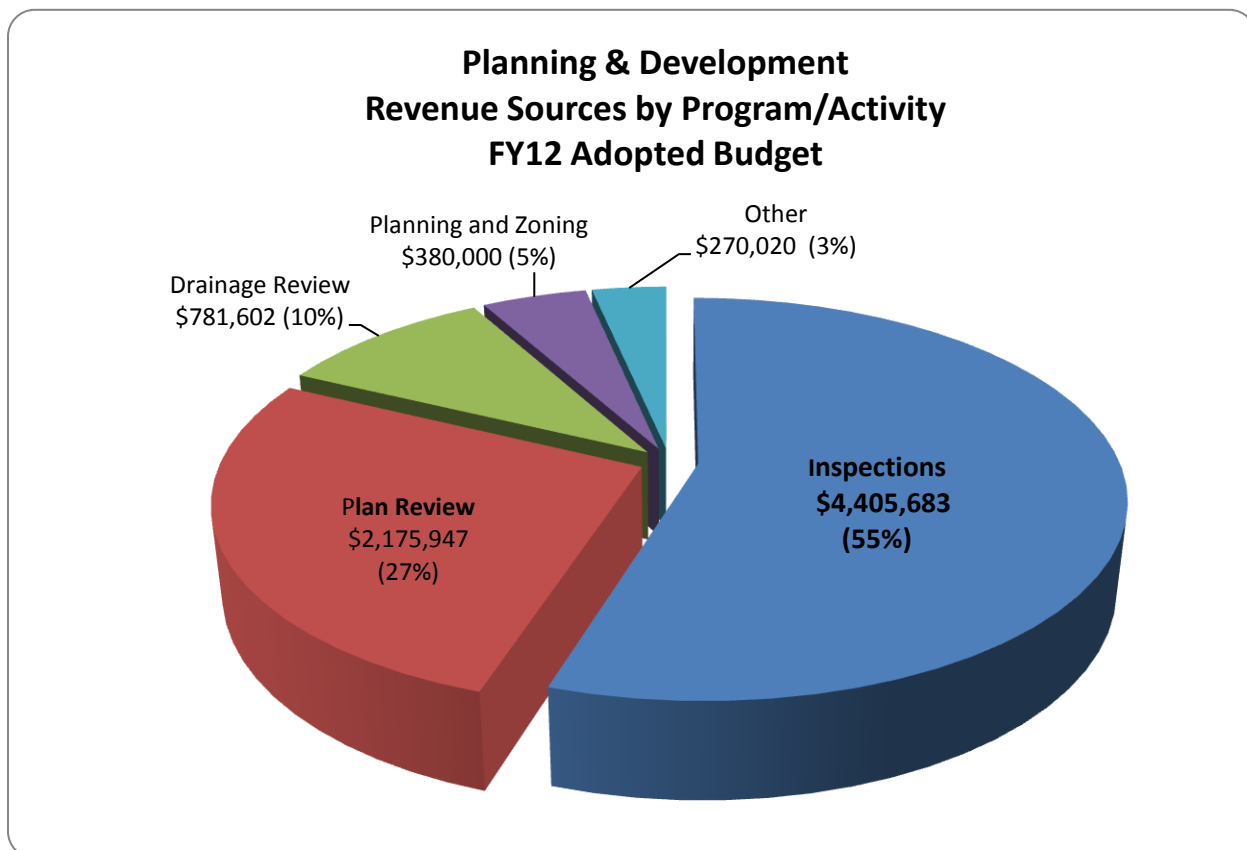

Source: Maricopa County Annual Business Strategies FYs 2002—2011

Expenditures Have Exceeded Revenues Since FY 2007

For FY 2012, P&D's adopted budget was $9,328,842, with revenue sources totaling $8,013,252. A general fund transfer in the amount of $1,015,855 is anticipated for FY 2012, given the depletion of P&D's fund balance in FY 2011. A summary of all revenue sources appears in the following chart. As shown, inspection fees account for 55% of total revenues.

Planning & Development
Revenue Sources by Program/Activity
FY12 Adopted Budget

Planning and Zoning $380,000 (5%)

Other $270,020 (3%)

Drainage Review $781,602 (10%)

Inspections $4,405,683 (55%)

Plan Review $2,175,947 (27%)

Source: Maricopa County Annual Business Strategies FY 2012

Inspection Fees Comprise Over Half of P&D Revenues

Scope and Methodology

Audit Objectives

The scope of our audit was limited to building inspection operations and information technology general and application controls in place at the time of our review. Drainage inspections were outside the scope of our review. Fieldwork was conducted from September to November 2011. Our audit objectives were to:

- Determine if internal controls are in place to ensure that building inspections are timely and effective
- Determine if IT general controls are effective

- Review critical application controls to determine that they ensure data confidentiality, integrity, and availability of the Accela Automation (Accela) software application

We achieved our audit objectives by:

- Obtaining a software system (Accela) report of all inspections completed in FY 2010 and FY 2011 to assess the timeliness of inspections. The date scheduled was compared to the date performed to determine if inspections were conducted within one business day of requests made by 2:30 p.m.

- Interviewing key personnel, reviewing inspection operations and related policies and procedures, reviewing staff qualifications, assessing the adequacy of fraud prevention and detection controls, and determining if inspection operations met select industry standards and best practices in order to assess the effectiveness of building inspection operations overall.

- Reviewing security management, access controls, configuration management, and segregation of duties over the Accela system.

- Reviewing application controls over user provisioning and access, database administration, change management, reporting, sensitive customer and financial data, importing data to Accela and its interfaces, and adequacy of Accela user training and application support.

Auditing Standards

We conducted this performance audit in accordance with generally accepted government auditing standards. These standards require the following:

- An independent audit staff and audit organization

- An objective audit staff performing the work

- A competent staff, current with continuing education requirements

- A system of quality control procedures

- Sufficient and appropriate evidence based on audit objectives

Department Reported Accomplishments

Planning and Development has provided the Internal Audit Department with the following information for inclusion in this report.

- Staff partnered with stakeholders to bring a variety of county regulations into alignment with the community values expressed by residents and property owners of unincorporated Maricopa County. The goal is to achieve the minimum level of regulation necessary to ensure public health, safety and welfare are maintained.

- Instituted a Solar Program to facilitate development of solar power generation facilities in unincorporated Maricopa County. The following actions have been implemented:
  - Formed a specialized Solar Team in order to ensure large scale solar project applications are prioritized and expedited.
  - Introduced two text amendments to better support large scale solar projects.
  - Bi-weekly coordination meetings are held between staff and representatives from both the Solana and Mesquite Solar construction teams.
  - Intake by appointment was established for these projects to provide a higher level of service and to possibly identify a potentially deficient plan set, thereby saving time in the long run.

- Incorporated the Personal Assurance of Submittal Accuracy form into the submittal process, which requires applicants to attest to the accuracy and completeness of submittal materials. In turn, staff is no longer required to research historical activity relating to parcels. Subsequently, plan review turnaround time has been reduced by 50%.

- Implemented an Ombudsman Program to respond to concerns, investigate complaints, provide community outreach and promote systematic change where needed.
  - Prepared reports with analysis and recommendations based on the referrals to the Ombudsman.
  - Partnered with the Arizona Registrar of Contractors to increase public awareness regarding local permitting requirements and documentation.
  - Conducted outreach and training presentations to Sun City organizations to better serve residents.

- Improved the level of inspection information presented to customers.
  - Developed a process so that a list of inspections, specific to the project, print on each permit.
  - Redesigned the format of the permit to better highlight critical information.
  - Produced supplemental information in an easy to read tri-fold pamphlet.

- Implemented institutional changes to facilitate permitting and inspections for large design-build construction projects, like the 16-story Maricopa County Court Tower. The changes provide customers with increased flexibility with regard to phased design submittals, ongoing project coordination, and on-demand inspection services.

- Met or exceeded service performance targets for walk-in assistance, permit plan review and inspection services including (1) counter assistance within 30 minutes; (2) plan reviews in 2 weeks or less; and (3) next-day inspections.

- Of the 6,873 permits submitted to P&D in 2010, approximately 34% or 2,302 were processed on-line. This option allows customers to submit documents and receive permits online without the expense of paper plans or traveling to submit documents.

- All Maricopa County Planning and Development building inspectors maintain one or more International Code Council certifications. Code-current training and certifications offer commercial and residential customers knowledgeable inspection services and ensure safe construction.

Issue 1 Building Inspections Are Timely

Summary

Building inspections were performed timely (within one business day) in fiscal years 2010 and 2011.

Criteria

Arizona law requires that inspections be made at the "earliest reasonable time." P&D has established a goal of providing building inspections within one business day for all customer requests made by 2:30 p.m.

Condition

Over 98% of building inspections were completed within one business day during FY 2010 and FY 2011, as shown below.

Building Inspections Completed FY 2010 & FY 2011			
FY	Performed within 1 Day	Total Performed	% within 1 Day
2010	26,255	26,722	98.3%
2011	21,669	21,791	99.4%

Source: Accela report

Recommendation

None, for information only.

Issue 2 Inspection Requirements Are Undefined

Summary

Improvement is needed to ensure that inspections are properly conducted. Specifically, (a) inspection requirements are undefined, (b) work performed is not well documented, and (c) policies and procedures are lacking. These weaknesses greatly increase the risk that code violations and/or other improprieties will go undetected, and inhibit management's ability to properly monitor operations. Planning and Development should (a) ensure that inspection requirements are clearly defined by inspection type and consider developing inspection checklists, to the extent practicable, (b) establish written internal policies and procedures for inspection operations, and (c) work with Regional Development Services Agency information technology to develop more useful management information system reports for monitoring inspections.

Criteria

Industry best practices were derived from the International Accreditation Service, Inc. (IAS) Accreditation Criteria for Building Departments/Code Enforcement Agencies. The IAS is a subsidiary of the International Code Council (ICC), which promulgates the building codes adopted by the Board.

IAS standards require that certain policies, procedures, and checklists for inspections be documented, including but not limited to special inspections, third party inspections, and final inspections. In addition, the IAS standards require oversight and monitoring of inspections to include adequate supervision methods and specific reporting requirements.

Condition

There is no effective system in place for management to ensure that inspections are performed thoroughly and consistently from inspector to inspector, as evidenced by the following:

- Inspections requirements are not clearly defined

- Inspection activities (i.e., work performed during an inspection) are not well documented

- Policies and procedures are lacking

Inspection Requirements Are Not Clearly Defined

Although P&D building inspectors are tasked with performing 70 different types of highly technical inspections, the specific requirements (i.e., tasks to be performed during an inspection) have not been defined. Instead, inspectors are provided with copies of the various adopted building code books in order to identify inspection requirements. However, these books contain over 3,300 pages of construction standards developed specifically for builders (not inspectors). Further, while the code books contain brief descriptions of the various types of inspections, they do not include inspection requirements or provide other guidance that is essential for ensuring that inspections are thorough, consistent, and effective.
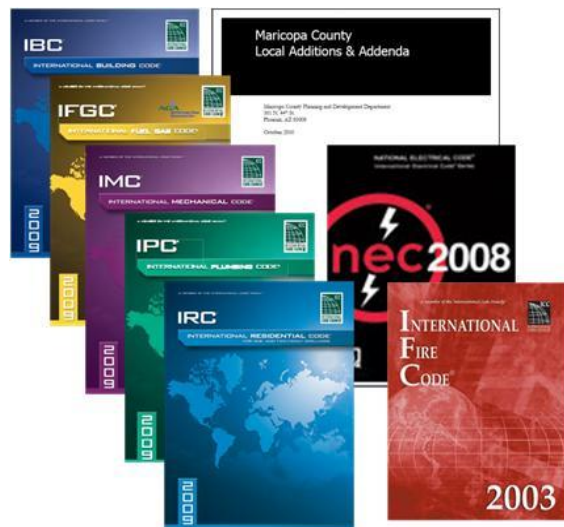
Code Books Provided to Inspectors
Do Not Specify Inspection Requirements

Additionally, there is no requirement that inspectors document the various tasks performed. Documentation is generally limited to a high-level summary of inspection results (i.e., approve, partial approve, denied), although the number and types of tasks that should be performed vary greatly by inspection type. As a result, there is no effective system in place for management to determine the extent and/or adequacy of the work performed.

While we recognize that each project is unique, based on our research, checklists could be designed to encompass the most common areas that are inspected. The checklists could also be designed so that other project-specific items could be added on a case-by-case basis. Many municipalities use checklists and make them available to the public to assist builders in meeting code requirements and passing inspections. Additionally, although Accela has the ability to import inspection checklists, this feature is not being utilized. Developing inspection checklists would greatly improve documentation, inspector accountability, and management's ability to ensure that inspections are conducted thoroughly and consistently.

Further, while some follow-up is reportedly performed by the inspections supervisor to ensure that inspections are properly conducted, requirements are informal and the focus is often on timeliness as opposed to effectiveness. For instance, the supervisor reportedly reviews an Accela report daily to ensure that inspections are timely and spot checks the notes entered in Accela by the inspectors. In addition, there is an informal goal that the supervisor perform at least two "ride-along" evaluations with each inspector annually. For FY 2011, we found documentation of bi-annual ride-alongs for 8 of 10 inspectors. Staff rotations and random field checks are not performed.

In addition, IAS standards require inspections to be tracked in a number of ways, including the number and types of inspections completed in the last 12 months by category, the percentage of work rejected and corrected by category, rejections and corrections by inspector, and typical

reasons for rejections and corrections. The purpose of tracking inspections in these ways is to identify trends, anomalies, or possible impropriety.

P&D's existing management information system (MIS) reports are used predominantly for monitoring the timeliness of inspections. These reports reflect the number of inspections requested and completed on a particular day and include inspection results. P&D was unable to provide summary level data, such as the inspection approval rate by inspector, or identify certain basic information, such as the most common reason for inspection denials.

<u>Internal Policies and Procedures Are Lacking</u>

There is a lack of written guidance for inspection operations overall, as internal policies and procedures have not been formalized in writing. IAS standards require policies, procedures, and checklists for inspection operations overall, including procedures for approving and overseeing *third party* and *special inspections*, as discussed below.

Typically, inspections are performed at various intervals during construction. However, on occasion an owner may build beyond the point at which an inspection can be performed or they may deviate from approved plans. In these cases, P&D may require the owner to remove the unapproved work so that the structure can be properly inspected. In some limited cases, P&D may allow customers to hire a private sector inspector; these are known as *third party inspections*. P&D is responsible for overseeing the work performed by third party inspectors. While instructions for third party inspections have been documented informally via email, the correspondence was not readily available and written policies and procedures have not been adopted.

Additionally, there are several areas of construction regulated by the International Building Code (IBC) where *special inspections* are mandatory (e.g., steel construction, concrete construction). Special inspections are defined as "the monitoring of the materials and workmanship that are critical to the integrity of the building structure." P&D is not responsible for performing special inspections, as the IBC requires the project owner to hire specially qualified inspectors for this purpose. However, P&D is responsible for ensuring that special inspectors are properly qualified and that special inspections are conducted in accordance with the IBC. P&D has developed a form that serves as a project owner's notification to P&D of their choice of a special inspector; the special inspector is required to sign the form to certify compliance with the IBC. However, P&D has not developed the internal policies and procedures needed to ensure the proper oversight of special inspections.

Effect

The lack of clearly defined inspection requirements and related policies and procedures greatly increases the potential for inspections to be performed improperly and/or inconsistently. In addition, failure to require inspectors to document inspection activities greatly inhibits management's ability to properly monitor inspection operations. These issues significantly increase the risk that code violations and/or other improprieties will go undetected, thereby increasing the risk to public safety.

Cause

Inspection requirements have not been defined and formal policies and procedures have not been developed because the building code books and existing informal procedures were considered sufficient given the years of experience and qualifications of inspection staff.

Recommendations

P&D should:

A. Ensure that inspection requirements are clearly defined by inspection type and consider developing inspection checklists, to the extent practicable.

B. Establish written internal policies and procedures for inspection operations. Specific documentation requirements should be included to ensure that an adequate record of inspection activities is recorded and retained.

C. Work with RDSA information technology (IT) to develop more useful MIS reports for monitoring inspections.

Issue 3 Inspector Qualifications Are Not Properly Verified

Summary

Inspector qualifications are not properly verified and professional certifications are not tracked. Failure to properly verify credentials could result in hiring an inspector who is not properly qualified. Planning and Development should ensure that qualifications are properly verified for all new hires and consider tracking professional certifications.

Criteria

IAS standards require verification of inspector qualifications and tracking of certifications, which should include current standing and expiration dates of certifications.

Condition

Inspector Credentials Are Not Properly Verified

While there is no requirement that inspectors be certified, hiring decisions are greatly influenced by the types of professional certifications held by an applicant, according to management. We were advised that prior work experience, education, and professional certifications are verified by RDSA Human Resources (HR) prior to hiring an inspector. However, we found that HR only contacts the references that are provided by the applicant. HR stated that they would verify credentials upon request, but that no request had been made. Background checks are reportedly performed for contract employees.

Professional Certifications Are Not Tracked

The building inspection staff (13 employees) collectively holds 31 professional certifications, with all inspectors holding at least one certification. However, there is no effective system in place to track certifications. According to P&D, although inspectors are solely responsible for tracking their own certifications, copies are maintained in their personnel files. However, we were unable to locate documentation for 16 of the 31 (52%) staff certifications in the personnel files. Management was able to provide copies of all but one certification during our review. A summary of the various professional certifications held appears in the following table.

P&D Building Inspection Staff Certifications	
Certification	**Number Held**
Building Inspector	6
Residential Building Inspector	5
Plumbing Inspector UPC	3
Plumbing Inspector	2
Residential Plumbing Inspector	2
Building Inspector UBC	1
Building Plans Examiner	1
Certified Mechanical Inspector	1
Commercial Building Inspector	1
Commercial Electrical Inspector	1
Commercial Mechanical Inspector	1
Electrical Inspector: One- & Two-Family Dwelling	1
Electrical Inspector: Plan Review	1
Electrical Plans Examiner	1
Registered Civil Engineer	1
Residential Combination Inspector	1
Residential Electrical Inspector	1
Residential Mechanical Inspector	1
Total Certifications Held	**31**

Building Inspection Team Holds 31 Professional Certifications

Effect

The lack of proper verification of inspector qualifications could result in hiring an unqualified individual whose credentials have been misrepresented. The failure to track certifications could lead to management being unaware of lapses in certifications.

Cause

Inspector qualifications are not properly verified due to a lack of communication between P&D management and RDSA HR. Management has not established a system for tracking professional certifications because this task is performed by employees.

Recommendation

P&D should ensure that inspector qualifications are properly verified for all new hires and consider tracking professional certifications.

Issue 4 IT User Account Management Needs Improvement

Summary

Controls over user account management need improvement to ensure that system access privileges are (a) appropriately aligned with job duties, (b) properly approved and documented, and (c) removed promptly upon employee separation. We identified 41 employees with inappropriate access to inspection records, 2 employees with excessive administrative rights, and 4 employees whose access was not removed promptly after separation. In addition, there was a lack of documentation for user privileges granted and training provided. These weaknesses greatly increase the risk of errors, unauthorized access, undetected system vulnerabilities, fraud, and/or malicious attack. Regional Development Services Agency information technology should establish effective user account management policies and procedures, and improve training documentation.

Criteria

COBIT, an international, generally accepted IT control framework gives guidance about control requirements, technical issues, and business risks. Internal Audit uses COBIT as an authority for good IT control practices. The COBIT framework includes the following recommendations:

- Establish and maintain approval procedures for system user accounts that include specifying the data owner that grants access privileges and approves the level of access

- Establish and maintain a formalized process for requesting, establishing, issuing, suspending, modifying, and closing user accounts and related user privileges, and perform regular management review of all accounts and related privileges

- Implement a division of roles and responsibilities that reduces the possibility for a single individual to compromise a critical process, which ensures personnel are performing only authorized duties relevant to their respective positions

- Formally establish a user training curriculum and regularly evaluate its contents, and provide training to ensure the proper use and operation of applications and infrastructure

Condition

We reviewed account management controls and found that RDSA IT did not:

- Document authorization of new Accela system users for 1 of 8 (13%) new employees sampled.

- Maintain records of Accela profiles showing user privileges granted.

- Maintain formal policies requiring a regular review of system access authorities and job compatibilities. Common practice is to establish a roles and duties matrix that identifies job titles and appropriate system access levels.

- Retain Accela training records, although there was a documented training plan that appeared to adequately cover the key information that system users and IT administrators need.

We also identified the following:

- Forty-one employees had unnecessary access to enter and edit inspection records in Accela.

- Two employees had excessive administrator access rights (the IT services supervisor's access to Accela and a senior programmer's access to the Accela database). The access granted to these two individuals represented segregation of duties violations.

- Four employees had access after their employment ended. Access had not been removed for one employee who retired nearly two years ago, or for two employees who terminated employment eight months ago. In addition, access for one RDSA IT employee was not removed for 28 business days after their employment ended.

Effect

Inadequate user account management controls could lead to inconsistently applied user roles and unauthorized access, and increase the risk of errors, unauthorized access, undetected system vulnerabilities, fraud, and/or malicious attack. In addition, RDSA IT cannot determine whether Accela training has been sufficient if they do not track training participants. As a result, some P&D users may be unaware of key system functionality or how to appropriately process transactions due to missed training opportunities.

Cause

P&D and RDSA have not yet jointly made the decisions necessary to ensure effective user account management due in part to RDSA's rapid growth in recent years. In addition, RDSA IT reports that they have not formally documented who has completed Accela training because policy does not require documentation. Further, they are in the process of turning this responsibility over to RDSA HR.

Recommendations

RDSA IT should:

A. Develop a formal Accela user review policy that ensures user profiles are consistent with job duties by adopting a role-based user access matrix.

B. Periodically analyze application access rights and system permissions to determine appropriate roles and groups, and update as necessary.

C. Verify that inappropriate system usage has not occurred due to excessive application permissions, that system information was not inappropriately disclosed, and that potential malicious activity was not performed due to excessive system access.

D. Work with RDSA HR to obtain prompt information about all employee changes (new hires, transfers, and terminations) and ensure appropriate changes are made timely.

E. Work with RDSA HR to ensure proper documentation of user training is maintained.

Issue 5 IT Policies Need Improvement

Summary

Security and change management policies and procedures need improvement. Many security management processes are informal or undocumented. Although a change management policy was recently established, it has not been formally approved and is not consistently followed. Inadequate security management procedures increase the risk of unauthorized access. Changes made outside a controlled configuration environment could degrade system performance, result in improperly processed reports or transactions, or contribute to system outages. Regional Development Services Agency information technology should formalize security and change management policies and procedures, and work with the permit software vendor (Accela) to establish an audit log.

Criteria

COBIT recommends the following change management, security management, and audit log policies:

- Change Management: Ensure IT changes are formally documented and controlled

- Security Management: Establish a security plan based on a formal IT risk management framework, and define and implement security policies and procedures

- Audit Logs: Implement automated audit logs where appropriate

Condition

P&D retains control of core IT services and functions. Vendors are used for services such as interactive voice response system, point of sale payment processing, online payment processing, and Accela application related sources, but RDSA IT has not outsourced any core IT functions. Many security management processes are informal or undocumented, including:

- Undocumented security program — RDSA IT has not formally assigned security responsibilities, implemented effective security-related personnel policies, and monitored the overall effectiveness of the security program.

- Undocumented IT risk assessment process — RDSA IT does not formally risk assess its IT environment to systematically identify potential threats to the organization or plan remediation for identified high risks.

- No user security awareness training — RDSA IT does not educate users in establishing strong passwords, preventing phishing attacks, or opening email attachments from unfamiliar or unexpected sources.

- Poor IT security monitoring program — P&D performs some security monitoring processes and procedures, but generally addresses security issues on an ad hoc basis. Information security measures are primarily reactive in response to live events.

While RDSA IT has draft policies and procedures for application change management (e.g., tracking changes, testing, user approvals, migration to production), the policies have never been formally approved, are not consistently followed, and do not clearly document who has access to make application changes. Instead, changes are performed based on responses to emails or help desk tickets. In addition, Accela does not currently have an audit log function or the capability to record detailed account changes or who made them in the system, which is important to trace errors and improper system changes.

Effect

RDSA IT has not made P&D users aware of their information security responsibilities; Accela may be more vulnerable to unauthorized use or malware when informal IT security policies and a limited security governance structure exist. In addition, incomplete change management policies could result in unauthorized or untested changes being introduced into the Accela system, creating data integrity and system availability problems. Further, the absence of an audit log greatly restricts management's ability to properly monitor user activity.

Cause

RDSA IT states that they are aware of the need for improved security policies and have begun to develop them, including implementing a new help desk system that will track and maintain IT security documentation. Although RDSA IT has drafted change management policies, they report that the on-boarding of additional agencies into RDSA has reduced their ability to focus on policy and governance issues. Finally, Accela does not include an audit log feature as part of its standard installation.

Recommendations

RDSA IT should:

A. Establish a formal security management program, including IT risk assessment, security training, security control monitoring, security due diligence and monitoring procedures, and a security event response process.

B. Formally adopt and follow its change management procedures.

C. Work with the vendor to determine the feasibility of creating and maintaining audit trails and logs in Accela.

Issue 6 Key IT Controls Generally Followed Good Practices

Summary

Regional Development Services Agency information technology controls generally followed the international, generally accepted control framework known as COBIT in the following areas: sensitive licensure data, customer financial data, system interfaces, and service desk satisfaction.

Criteria

The COBIT framework recommends:

- Defining and implementing policies and procedures to identify security requirements for sensitive data

- Assessing the impact of major upgrades on existing systems, processes, and security

- Developing a well-designed and well-executed service desk and incident management process to allow for timely and effective responses to IT user queries and problems

Condition

Key RDSA IT controls generally followed the COBIT framework in the following areas:

IT Controls Reviewed	
Area	**Description**
Sensitive Licensure Data	P&D defines sensitive customer data as personal information (name, address, phone number, email, and license type) for adult business holders. Our testing did not show any instances where adult business license data was accessible through the public website or by unauthorized P&D employees.
Customer Financial Data	P&D fees may be paid online via PayPal or in person using a third-party credit card processor. P&D does not store credit card or other personally identifiable payment information within Accela.
System Interfaces	Our review of system interfaces (interactive voice response system, Environmental Management System, SIRE, ProjectDox, and Permits Plus) did not show any instances where data inputs or outputs may have been compromised.
Service Desk Satisfaction	Customer satisfaction survey results regarding the effectiveness of the RDSA Help Desk were mostly positive.

Recommendation

None, for information only.

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Department Response

General Response:
Management staff for Planning and Development has reviewed the IAS criteria used in this audit. It is generally accepted that the criteria represents a high standard that conforms to the Department's Mission Statement and the County's Managing for Results strategy.

However, IAS certification is currently held by only 13 communities in the US. An alternative measurement is the Building Code Effectiveness Grading Schedule (BCEGS). This standard evaluates inspector certification and training, staffing levels, public awareness programs, code adoption and enforcement as well as other criteria. This rating is used to determine insurance rates for citizens within the community and as such provides a direct impact to the customers of Maricopa County.

Maricopa County currently has a rating of 4 for residential structures and 5 for commercial structures. The residential rating for Maricopa county is shared by 34 other municipalities out of 65 rated communities with only 13 communities achieving a higher rating. The residential rating places the County within the top 30% of all rated communities in the US.

Management supports the adoption of a new standard and, as outlined in the specific responses below, is in the process of achieving significant improvement. However, complete implementation of improvements may be restricted based on staffing and budgetary constraints.

Issue #1: Building inspections were performed timely (within one business day) in fiscal years 2010 and 2011.

Recommendation: None, for information only.

Response: While this item is not identified for improvement, it is noteworthy that Maricopa County has maintained an exemplary record of service for inspection completion. County inspectors have continued to provide "next-day" inspections for County residents and businesses despite significant staff reductions and an increase in significant large scale commercial projects, including multiple solar power generating plants, several of which are located at a significant distance from primary County development corridors.

Issue #2: Improvement is needed to ensure that inspections are properly conducted. Specifically, (a) inspection requirements are undefined, (b) work performed is not well documented, and (c) policies and procedures are lacking.

Recommendation A: Planning and Development should ensure that inspection requirements are clearly defined by inspection type and consider developing inspection checklists, to the extent practicable.

Response: **Concur–in process**. While County staff has primarily operated quite efficiently for a number of years utilizing informal policies, procedures and checklists; including ICC developed code references for inspectors, management staff concurs that

formal written documentation is an appropriate enhancement. Management staff is currently working with County IT staff to integrate a number of audit and staff identified improvements, including inspection checklists, into a new update of the permit processing and inspection tracking software used by Planning and Development as well as other County Departments.

It is also noted that while this functionality was possible under previous versions of the permit tracking software, the required supporting hardware and technology to fully utilize the functions were not available to Maricopa County due to budgetary constraints. Management staff will institute additional training using developed checklists to ensure consistency and completeness for inspection results.

Target Completion Date: Additional Staff training   04/01/2012
                                         Software enhancements   07/01/2012

Benefits/Costs: P&D agrees that the recommended best practices will benefit the department and customers.

Recommendation B: Planning and Development should establish written internal policies and procedures for inspection operations. Specific documentation requirements should be included to ensure that an adequate record of inspection activities is recorded and retained.

Response: **Concur–in process**. Management staff is developing internal procedures to supplement and document current practices and procedures such as requirements for 3rd party inspections. However, it should be clarified that while the current procedures do not specifically track when 3rd party reports are accepted, permit specific inspections logs do clearly identify for the individual permits when 3rd party reports have been accepted in lieu of County inspections. Additionally, all permits currently have a clear and accessible inspection record.

Software improvements are being explored so that reports can de developed that would identify when 3rd party inspections have been accepted for each permit record. Additional software improvements are being explored to classify the categories of failed or denied inspections.

Additional reporting is being developed to review inspection results for each inspector to identify if anomalies are present in the inspection record.

Target Completion Date: 07/01/2012

Benefits/Costs: P&D concurs that expanding the current inspection documentation and formalizing procedures will be of benefit.

Recommendation C: Planning and Development should work with Regional Development Services Agency (RDSA) information technology to develop more useful management information system reports for monitoring inspections.

Response: **Concur--in process**. Management staff is actively participating in the review and testing of new software for permit management so that all available features can be implemented and effectively used.

Target Completion Date: 07/01/2012

Benefits/Costs: Useful management information system reports for monitoring inspections will better assist management.

Issue #3: Inspector qualifications are not properly verified and professional certifications are not tracked.

Recommendation: Planning and Development should ensure that inspector qualifications are properly verified for all new hires and consider tracking professional certifications.

Response: **Concur – completed.** RDSA Human Resources follows all of the required processes and protocols established by County Human Resources / Employment Division. Verifying credentialing is not a requirement. However, the hiring managers within the Planning & Development department have a long standing practice of giving preference to those applicants who have certifications. Once hired it has been the employees' responsibility to self-track and maintain certifications. During fiscal years 2009 and 2010, Planning & Development did not have the funding to pay for these certification classes for employees. Yet, employees chose to maintain their certifications. As indicated in the audit summary, we did ultimately provide copies of all but one certification which has since been received and placed in the employee's file. We are confident that we have qualified inspectors and utilize not only the interview but the probationary period to ensure that they have the knowledge and experience to appropriately complete the inspections required of them. As a result of this audit, RDSA HR has created a spreadsheet indicating the expiration date of each certification on file for our existing inspectors. We have traced the matter to be followed up on in 90 days prior to the expiration and will be collecting renewal certificates to be placed in the employees' HR file. Applicants who indicate that they have a professional certification will be asked to provide a copy or proof of certification when an offer of employment is extended. We have also identified a contact person at the International Code Council with whom we can verify certification should the candidate for hire not have a copy of their professional certification.

Target Completion Date: Completed and on-going.

Benefits/Costs: Formal procedures to verify certifications will allow for proper verification of these requirements when applicable.

Issue #4: Controls over user account management need improvement to ensure that system access privileges are (a) appropriately aligned with job duties, (b) properly approved and documented, and (c) removed promptly upon employee separation.

Recommendation A: RDSA IT should develop a formal Accela user review policy that ensures user profiles are consistent with job duties by adopting a role-based user access matrix.

Response: **Concur - completed.** The RDSA IT department partnered with the departments using the Accela Automation application (Planning & Development & Environmental Services), to establish a role-based user access matrix. Each department updated the matrix and IT subsequently made the necessary system access corrections. The RDSA IT will administer system access for new hires based on the job role (per the matrix) the hiring manager indicates for the new hire.

Target Completion Date: Complete.

Benefits/Costs: The development of a formal Accela user policy ensures user profiles are consistent.

Recommendation B: RDSA IT should periodically analyze application access rights and system permissions to determine appropriate roles and groups, and update as necessary.

Response: **Concur - completed.** The RDSA IT department implemented an annual review process where a report is generated from the Accela Automation system displaying a list of all Accela Automation access rights and system permissions to validate appropriate roles and groups. This report, along with the current version of the User Matrix will be provided to the department management team for review and update. All user access updates will be made by the RDSA IT team.

Target Completion Date: Completed.

Benefits/Costs: The establishment of a formal process to analyze access rights and system permissions will be of benefit.

Recommendation C: RDSA IT should verify that inappropriate system usage has not occurred due to excessive application permissions, that system information was not inappropriately disclosed, and that potential malicious activity was not performed due to excessive system access.

Response: **Concur–in process.** Staff is in the process of reviewing activity reports to determine if inappropriate access occurred after dates of termination.

Target Completion Date: 4/1/2012

Benefits/Costs: It is anticipated that the additional IT best management practices, to be implemented as noted in this document, will significantly diminish potential risk of inappropriate system usage.

Recommendation D: RDSA IT should work with RDSA HR to obtain prompt information about all employee changes (new hires, transfers, and terminations) and ensure appropriate changes are made timely.

Response: **Concur – completed.** RDSA HR has mechanisms in place to alert RDSA IT of new hires and terminations. The current methods vary for each department within the RDSA constellation. Ensuring consistent use of these methods has been communicated to all of the RDSA HR staff and timely attention to these changes communicated to all of the RDSA IT staff. There is also an existing method (PND Help Desk Ticket) to communicate changes that are needed to an existing employee's IT profile (i.e. in the case of a transfer or additional responsibilities being assigned). All Planning & Development Supervisors have been reminded of the importance of requesting these changes through the appropriate method so that a record of who made the request and why a change in profile was granted has been communicated.

Target Completion Date: Completed.

Benefits/Costs: P&D concurs that prompt system updates related to employee status changes are beneficial and has implemented this recommendation.

Recommendation E: RDSA IT should work with RDSA HR to ensure proper documentation of user training is maintained.

Response: **Concur –completed.** The RDSA HR provides Accela Automation system training which covers basic Accela Automation functionality to all new hires in Planning and Development. A copy of the sign in sheet is maintained on file.

Target Completion Date: Complete.

Benefits/Costs: Documented user training will assist with consistent monitoring of employee training.

Issue #5: Security and change management policies and procedures need improvement. Many security management processes are informal or undocumented. Although a change management policy was recently established, it has not been formally approved and is not consistently followed.

Recommendation A: RDSA IT should establish a formal security management program, including IT risk assessment, security training, security control monitoring, security due diligence and monitoring procedures, and a security event response process.

Response: **Concur–in process.** The RDSA IT Roadmap for the FY12 includes development of a formal Risk Mitigation and Response plan, which includes a risk assessment, security training, security control monitoring procedures and response process.

Target Completion Date: 07/01/2012

Benefits/Costs: Additional formalized security management processes are beneficial and anticipates implementing a consistent, formal procedure throughout the RDSA constellation.

Recommendation B: RDSA IT should formally adopt and follow its change management procedures.

Response: Concur--in process. The RDSA IT has a draft change management policy in place which will be refined upon completion of the Accela Automation V7.1 upgrade system deployment for the Air Quality Department.

Target Completion Date: 08/01/2012

Benefits/Costs: Implementation of formalized change management procedures are beneficial.

Recommendation C: RDSA IT should work with the vendor to determine the feasibility of creating and maintaining audit trails and logs in Accela.

Response: Concur--in process. The RDSA IT requested the Audit Trail functionality from the Vendor and was informed by the vendor that this functionality is not available in the V7.1 upgrade. The RDSA IT is working on a quote for custom development of this functionality and a business decision will be made on feasibility.

Target Completion Date: 04/30/2012

Benefits/Costs: There is benefit to maintaining audit trails. The department will pursue implementation of this benefit if it is cost attainable. The cost of this vendor upgrade to improve system functionality is not known at this time.

Issue #6: **Regional Development Services Agency information technology controls generally followed the international, generally accepted control framework known as COBIT in the following areas: sensitive licensure data, customer financial data, system interfaces, and service desk satisfaction.**

Recommendation : None, for information only.

Approved By : _____   2·17·12
Department Head/Elected Official   Date

_____   2.17.12
Assistant County Manager   Date

_____   2/17/12
County Manager   Date